



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Takafumi ATARASHI, et al.

Appln. No.: 09/202,216

Confirmation No.: Unassigned

Group Art Unit: 1615

Filed: April 8, 1999

Examiner: T. Ware

For: MULTILAYER-COATED POWDER

RESPONSE UNDER 37 C.F.R. § 1.111

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Responsive to the outstanding Office Action of November 21, 2000, once extended from February 21, 2001 to March 21, 2001 by the filing of an appropriate Petition and payment for an extension of time submitted herewith, please consider Applicants' remarks as follows.

Claims 1-7 and 9-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 3,767,443 to Clark et al.

Furthermore, claims 1-7 and 9-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark et al.

Clark et al was cited as disclosing a multi-layer-coated powder pigment comprising a core coated with plural layers of a metal oxide and an organic film-forming substance having different refractive indices. The cores are said to be made of polymers such as polyethylene terephthalate, and the coated particles are comminuted into particles that are about 70 microns. The Examiner further considered that the composition of Clark et al would inherently (i.e.,

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necessarily) meet the claimed specific gravity, and that the particles appear to be made of the same materials as claimed which are then pulverized.

Applicants respectfully traverse for the following reasons.

The present invention is directed to a multilayer-coated powder comprising a base particle having a specific gravity of 0.1 to 10.5 and having thereon plural coating layers which are different from each other in refractive index. Particularly, the present invention has been achieved based on the finding that a powder colored in a stable tone, such as blue, green, or yellow, can be obtained without a dye or a pigment by forming a thin film comprising plural layers differing in refractive index on the surface of a powder to regulate the multilayered film with respect to its reflected-light interference waveform (pages 7-8 of the specification).

To the contrary, the particle of Clark et al has no core, and is produced by removing plural layers shown in attached Fig. 1-1 from a belt, followed by comminuting. Accordingly, the particle does not have a core on which uniform layers have been coated, whereas the powder of the present invention requires a core on which uniform layers have been coated as shown in attached Fig. 1-2.

Moreover, the particle of Clark et al is obtained by comminuting plural platy layers on the belt. When the plural layers are comminuted with exfoliation at a layer boundary, the resulting interference color becomes very pale or transparent. When the plural layers are comminuted irregularly, the area required for obtaining an interference color is reduced so that the original interference coloring effect is reduced and the color becomes faded. See Figs. 2-1 and 2-2 attached hereto for illustration.

On the other hand, in the present invention, a color is obtained by forming plural layers on the surface of a base particle. Accordingly, when uniform particles are used as the core, plural layer-coated color particles having a uniform particle size can be obtained. This effect cannot be expected from Clark et al.

Thus, the production process of the powder of the present invention is different from that of Clark et al, and therefore, the resulting powder of the present invention is also different from that of Clark et al.

More particularly, Clark et al teaches a process for-preparing a pearly pigment by depositing on a support alternating layers of high refractive index titanium or zirconium dioxide or an alkaline earth metal titanate and a lower refractive index organic film-forming substance. The layers thus deposited are stripped from the support and comminuted into fine particles (Abstract).

The polyethylene terephthalate mentioned by the Examiner is the support from which the alternating layers are stripped, and does not constitute a "core" as suggested by the Examiner (col. 2, line 64 - col. 3, line 15). This is shown by reference to the specification of Clark et al as follows.

In accordance with this invention, the new pigment is made by applying alternately to a support thin layers of (I) a hydrolyzable titanic or zirconic ester or alkaline earth metal titanic ester, and (II) as an interleaving agent former, either (a) an organic film-forming substance containing... (col. 2, lines 38-42).

... and when at least two layers of the titanic or zirconic ester or alkaline earth metal titanic ester have been applied and hydrolyzed, stripping the multi-layer product from the support. (col. 2, lines 57-60).

To obtain continuous production of the pigment, the support is preferably an inert, long or endless, (i.e., looped) belt. Suitable materials for the belt are ... Polyethylene terephthalate film, which is readily available, has been found to be very suitable. (col. 2, line 64 - col. 3, line 11).

In reference to the specification at col. 1, line 46 - col. 2, line 38, the pigment of Clark et al is described as comprising a plurality of thin, clear layers of titanium or zirconium dioxide; or an alkaline earth metal titanate separated by, and adherent to, one or more thin, clear layers of an interleaving agent. There is no mention of a "core" as suggested by the Examiner. Rather, the laminate of alternating layers is stripped from the support, and the laminate is comminuted to form the pearly pigment. There are no cores.

In reference to Example 1 of Clark et al. at col. 9, ten layers of titanium dioxide and nine interleaving layers of cellulose diacetate were deposited onto an endless belt of polyethylene terephthalate. The product was stripped off of the polyethylene terephthalate belt and then comminuted to provide a pearly pigment. Again, there are no "cores".

For the above reasons, it is respectfully submitted that the present claims are neither anticipated nor obvious over Clark et al, and withdrawal of the foregoing rejections is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-7 and 9-12 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

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Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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